COLORADO
Department of Transportation

219 Sodding and 220 Lawn Seeding Design Guidelines

Revised January 2026

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Design Phase Guidance

Introduction

It is important to understand that no one grass species works for all situations and uses in Colorado. Species selection should be based on an analysis of site conditions, project or clearance zone objectives, sod availability, foot traffic, elevation, amount of sun or shade, moisture, and USDA zones. Selecting the proper species for the lawn's use and site conditions is the first step to successful revegetation for your project.

Project Special Provisions 219 Sodding and 220 Lawn Seeding are to be used for irrigated grass within urban, suburban, commercial and industrial areas such as gateways, facilities and downtown streetscapes. For unirrigated rights-of-way use Sections 207 Subsoil and Topsoil and 212 Amendments and Native Seeding.

Lawns, either sodded or seeded, use should be minimized and should be kept to high use and high visibility urban, suburban, industrial, and commercial areas. Lawns may have much higher irrigation requirements than water-wise shrubs and perennial plantings. However, lawns are important for reducing ambient temperature, providing green areas for aesthetics, a green place for the eye to rest, and/or places for pedestrians to recreate or relax. Lawns can also act as a stormwater buffer, reducing runoff and protecting soils from erosion.

Policies and Regulations on Sodding and Lawn Seeding

CDOT's Procedural Directive 503.1 Landscaping Requirements and Pollinator Highways requires the use of native grasses and forbs in unirrigated areas such as our rights-of-way. Non-native low water using grasses such as DogTuff™ or RTF® Water Saver Sod, can be implemented with irrigation to support its growth during extended periods of heat and drought.

Senate Bill 24-005 (SB5) prohibits the installation of nonfunctional turf, artificial turf, and invasive plant species on nonresidential properties for new development and some redevelopment projects on or after January 1, 2026. SB5 does not apply to existing development or new residential development. SB5 primary purpose is to reduce outdoor water demands by limiting the amount of non-native, cool-season, high water use turf in landscaping. The bill intends for communities to replace the practice of installing nonfunctional, high water use turf with "water-wise landscaping" that reduces outdoor water consumption without impacting landscape functionality or quality of life.
The Governor's Executive Orders D2023 018 on Directing the Development of a Water Efficient Landscaping Policy for State Facilities requires new development and substantial landscape renovations to install drought-tolerant lawn grasses and high-efficiency irrigation and D2022 016 on Concerning the Greening of State Government directs state agencies to reduce the amount of water used by State properties to support the Colorado Water Plan.

Application and Irrigation Requirements.

Both lawn seeding and sodding require supplemental irrigation. High elevation mountain communities with cooler summers and more rainfall may be the exception. In high elevations, over 7,000 ft, cool season grasses should be utilized due to the shorter growing season.

It is important to note that CDOT maintenance does not maintain irrigation along ROWs. Implement PSP 219 Sodding for larger turfgrass applications, whereas lawn seeding is generally used for repairs in small areas, such as medians along ramps, sidewalks and trails. Sodding creates an instant appearance of establishment and can be established quickly with supplemental irrigation spring through fall. Lawn seeding requires irrigation several times a day for several weeks until establishment. In specifying seed or sodding for repairs to existing lawns, work with a Landscape Architect, or your local extension office to determine grass species.

Local Agency Maintenance

Maintenance on ROW must be preceded by a maintenance agreement or Intergovernmental Agreement (IGA) that outlines how the sod/lawn seeding and irrigation will be maintained by the local agency. The IGA is developed and approved in the design phase as part of clearances in coordination with the local agency by CDOTs Region Local Agency staff in coordination with the Design Engineer, Maintenance Staff, and Environmental.

The local agency is responsible for the proper maintenance and care of the landscaped areas in the right-of-way. Maintenance of planted areas, including sod and lawn seeding, includes irrigation, mowing, fertilizing, weeding, cleaning, irrigation repair, re-seeding or replanting all landscape materials.

Long-term Maintenance at CDOT Facilities

CDOT Facility landscapes should implement water-wise landscaping principles, limit lawns to high traffic or highly visible areas, and use drought tolerant lawns to reduce water consumption. It is important to note that existing trees often require more irrigation than the surrounding drought tolerant lawns.

Sodding and lawn seeding is not appropriate for slopes greater than 4:1 due to limitations of mowing equipment. Consider native grasses for slopes 4:1 to 3:1. For slopes greater than 4:1 rock or cobble should be used for permanent stabilization.

Matching Existing Grass

Where repairs to existing lawn grasses are to occur, match existing grass species as closely as possible. The local extension office is a resource to identify the grass type. What is

available from the local sod growers or nursery may be the limiting factor for sodding, whereas seeding allows for a greater variation of species. Include temporary irrigation into the pay item.

Site Analysis

The landscape architect or environmental staff knowledgeable about Colorado ecoregions and plants to determine the best sod or lawn seed mix review the following:

Topsoil

Determine the soil type. Clay, sand, silt, or a loam (mixture). The Geotechnical Report, if available, is a good source of information and if available by. Coordinate with your Design or geotechnical engineer for what soil information is available. Note the soils information in the SWMP from the USDA soil texture classification is generic and may not reflect actual soil conditions due to cut and embankment material. Taking a soil sample and sending it for analysis to a laboratory is the best way to determine soil type. Refer to the topsoil testing procedure guidance.

Retaining existing topsoil is the most cost-effective method of reusing topsoil. The cost of moving topsoil at the site is approximately 1/6th that of importing soil and 1/3rd that of exporting soil.

Determine Site Conditions:

Pedestrian traffic level

- High -such as downtown streetscapes or near busy commercial areas.
- Low – such as CDOT facilities or gateways

Sun exposure (some grass species are not tolerant of shade)

- High – west or south facing slopes
- Low – north or east facing slopes

Soil Salinity and salt exposure

- Deicing salts will kill grasses and other plants. No turf grass is tolerant of high salts, but some are more tolerant than others.
- Dog urine contains salt and is acidic, so will kill grasses and other plants. Suggest using a light-colored rock, such as pea gravel, crusher fines, or 3/4 inch where high dog use is anticipated.

Existing or planned irrigation lines

- Do not specify sodding or lawn seeding where irrigation is not currently or planned

to be installed. Again, high mountain communities may be the exception.

Commercial Availability

- Determine what sod species are available from local growers within 1 hour drive.

Plant Hardiness

- Determine the USDA hardiness zone and ensure grasses can tolerate average minimum temperatures in that zone.

Elevation

- Select grass species whose elevation range is within the project site's elevation

Timing

- Sod is not available in late fall, winter and early spring and
- Lawn seeding should only occur when the ground is not frozen.
- Sod must be irrigated for a period of 30 days before final acceptance.
- Lawn seeding must be irrigated for 60 days prior to final acceptance. Irrigation is generally available between mid-May to Mid to late October.

Topsoil Depth
The depth of topsoil should be per plans.

Specify Sod and Lawn Seed Type
Specify sod species and seeding rates on plans. The species should be determined by a biologist, environmental specialist or landscape architect who knows turf grass. Below is a general discussion of turf grass species to determine best species for the project.

Cool Season Grasses.

Cool season grasses are best suited for high elevations, over 7000 ft, due to the short growing season. The following grasses, mixes and blend are cool season grasses:

Kentucky Bluegrass or bluegrass mixes. This species is known for its dense stand, rich bluish green color, and compaction tolerance. Limit use to high visibility urban streetscapes that have high foot traffic where other grasses wouldn't be successful. Kentucky bluegrass has both excellent heat and cold tolerance and can withstand short periods of drought. It requires 2.25" of supplemental irrigation per week under the hot, dry, and windy conditions typical of Colorado. Cooler months will require less irrigation. Kentucky bluegrass is a cool season non-native grass that prefers sun and has poor to fair shade tolerance. It has poor to fair salt tolerance but has a higher nitrogen requirement than other grasses so consider the salt content of soil amendments. This species requires weekly mowing to maintain its appearance. Suggested seeding rate is 3 to 4 pounds/1,000

square feet.

Tall Fescue and blends. Tall fescue is typically sold as a blend of grasses that may contain native species. Benefits of tall fescue blends include drought tolerance, compaction tolerance, salt tolerance, shade tolerance, heat and cold tolerance, and tolerance for a wide range of soil types. Tall fescue is a cool season grass with deep root systems that require less water than bluegrass turf. Two inches of water per week is sufficient in typical Colorado hot, dry, and windy conditions, with lower irrigation requirements in cooler months. Tall fescues perform best in well drained soils. Even fescue blends with blue grass content are considered to have low water needs. This species requires weekly mowing to maintain its appearance. Suggested seeding rate is 7 pounds per 1,000 square feet.

Fine Fescue Blend. Fine fescue blends are known for their high leaf density and suitability as a high elevation/mountain grass. These blends are appropriate for dry, rocky, sandy, well-drained, infertile and/or moderately salty soils. Fine fescues are cool season grasses that are very tolerant of cold, shade, and poor soil conditions, but have moderate salt tolerance and low compaction tolerance. They germinate quickly but mature slowly. Two inches of water per week is adequate in typical Colorado hot, dry, and windy conditions, with lower irrigation requirements in cooler months or higher elevations. Fine fescue blends are drought resistant but will go dormant. They prefer low nitrogen fertility and require less fertilization than bluegrass. Since fine fescues are not compaction tolerant, they are more appropriate for low to moderate traffic areas. This species requires weekly mowing to maintain its appearance. Suggested seeding rate is 5 pounds per 1,000 square feet.

Warm Season Grasses.

The following warm season grasses are best suited for lower elevations and full sun.

Buffalograss. This species is a native warm season native grass that is green from May to the first hard frost (usually in September) and is brown during the rest of the year. Buffalo grass is not tolerant of foot traffic, shade, salt or cold. It will quickly go dormant in cold or low water conditions. It forms a loosely dense sod, spreading by aggressive above ground stolons (horizontal growing rooting stem) that can invade neighboring sites. Buffalograss requires diligent maintenance of weeding for a full year and regular weeding thereafter. Mowing requirements vary but can be mowed once a year for clean up or monthly. Buffalograss grows best in elevations under 5,500 ft but a protected, sunny, south or west facing exposure may allow it to survive above 5,500 ft up to 7000 ft. Suggested seeding rate is 3 to 5 pounds per 1,000 square feet if broadcast; 2 or 3 pounds if drill seeded.

Blue grama Grass. A warm season native grass with unique eyelash like seed heads. Blue grama seldom grows taller than 12 inches. In dry years will be several inches tall and wetter years will grow to 12 to 20 inches tall. Blue grama is green from May to the first hard frost and is brown during the late fall through spring. Blue grama is a bunch grass and doesn't fill in like a cool season turf grass. Blue grama grass requires diligent maintenance

including weeding for a full year and regular weeding thereafter. Mowing requirements vary but can be mowed once a year to no shorter than 3 inches in early spring or late fall for cleanup. Blue grama grass grows best in elevations under 7,000 ft but is found in higher elevations up to 9,500 ft. Blue grama grows in full sun, well-drained soils and thrives in sandy or clay soils. Suggested seeding rate is 3 to 5 pounds per 1,000 square feet if broadcast; 2 or 3 pounds if drill seeded.

Bermuda grass. Similar in appearance to buffalograss, bermudagrass is a warm season stolon-forming grass but it is non-native to Colorado. Bermudagrass tolerates high traffic, drought, dog urine and salts. It will go dormant by October and remain dormant through early June. Bermudagrass should only be used in USDA hardiness zones 5 or warmer. It requires full sun and, once established, can be watered every other week during hot summer months and mowed as little as once a season. Suggested seeding rate is 2 to 3 pounds per 1,000 square feet.

Amendments

Refer to the design guidance 212 for more information on amendments.

Lawn Seeding – Mulching vs. Erosion Control Blanket

Mulch or blanketing helps improve seed establishment by reducing wind and stormwater erosion, retaining moisture, and breaking down into organic matter.

- Dry broadcast mulch (Hydromulch project in a pellet form for dry applications) can be utilized for slopes up to 4:1.
- Erosion control blankets can be used and should be 100% biodegradable, including the netting.
- Straw mulch, crimp and tackifier is not an appropriate mulching method for suburban or urban areas where straw can blow onto sidewalks or other improved areas. In addition, the equipment cannot access smaller medians. Use for slopes less than 3:1.
- Hydromulching is an option for larger projects over >0.5 acres, consider sodding for these areas. Hydromulching is generally not appropriate around buildings, sidewalks, fencing and other built environments. Specify a hydromulch appropriate for the slopes and soil types.

Establishment Phase

Sodding includes a 30-day establishment phase for rooting before final acceptance. At the discretion of the designer, and when the sod isn't anticipated to be turned over to the local agency for maintenance, include an additional 30-day establishment phase pay item to continue mowing and fertilizing.

Lawn seeding includes a 60-day establishment phase for germination and establishment before final acceptance. At the discretion of the designer, include an additional 30-day

establishment phase pay item and project special for lawn seeding establishment. A Post Construction Establishment Phase is also an option if funding is available. Talk to your project team about options to ensure establishment before closing out the permit.

The following pay items are associated with Sodding and lawn seeding.

219.00000 Sodding
220.00000 Lawn Seeding
207.00700 Topsoil (Onsite)
207.00606 Topsoil (Imported)
212 – Amendments For an explanation of amendments use refer to Chapter 212.
212.00700 Organic Fertilizer
212.00701 Compost (Mechanically Applied)
212.00702 - BSA (Hydraulically Applied)
212.00704 - Mycorrhizae (used only with lawn seeding)
213 and 216 Mulching and Blanketing
213.00011 Mulching (Hydraulic)
213. 00016 Mulching Pelletized Material (Waterless Application)
216.xxxxx Soil Retention/Erosion Control Blanket (refer to CDOT Item Code Book)
217 Weed Management
217.00000 Herbicide Treatment
217.00015 Noxious Weed Management

Construction Phase Guidance

The Landscape Architect or Staff Environmental can assist the Project Engineer with 219 and 220 submittals and inspection of the items in the checklist below. Landscape architects are knowledgeable in these items and please reach out to your region or headquarters landscape architect or environmental specialist for assistance.

Construction Phase Inspection Checklist

219 Sodding Checklist

✓	Item	Project Engineer's Review and Inspection	Comments
	Weed Management	Pesticide Applicator shall be licensed by Department of Agriculture. Contractor to check with local agency if approval of application herbicides requires approval.	
	Soil Preparation	Before being incorporated, the compost application should be approximately 2" thick on surface. The compost is incorporated into the top 6" of topsoil and should still be visible as darker material. Topsoil is free of debris over 1 inch.	
	Irrigation	Irrigation should be fully functional prior to installation of sod or lawn seeding. Have irrigation turned on and inspected to ensure each zone is functioning.	
	Delivery	Reject sod that appears yellow dried out or damaged (not in rolls) prior to installation.	
	Installation Inspection	Inspect to ensure there are no overlapping or gaping seams.	
	Final Inspection	Sodding will be reviewed for acceptance after 30 calendar days, prior to final acceptance. Review sodded areas with Contractor Any areas that failed to establish, the Contractor needs to be directed to reprep the soil, resod, and the 30-day establishment period restarts. If season or weather conditions are not	

✓	Item	Project Engineer's Review and Inspection	Comments
		conducive to sodding at the time then the rework must wait until favorable weather or spring when sod and irrigation is available. Acceptance is defined as healthy uniformly green grass over the entire sodded area that does not have any visible joints and no contiguous stressed, dead, or bare spots greater than 1 square foot. To check: Pull on grass at several joints. If the sod is yellow or brown and pulls up the sod is not rooted and is stressed or dying. If there are visible joints or yellowing at the joints, the sod still has not been established.	

220 Lawn Seeding Checklist

✓	Item	Project Engineer's Review and Inspection	Comments
	Irrigation	Inspect to ensure each irrigation zone is fully functional prior to installation of sod	
	Weed Management	Pesticide Applicator shall be licensed by Department of Agriculture. Contractor to check with local agency if approval of application herbicides requires approval	
	Soil Preparation -	Before being incorporated, compost should be approximately 2" thick on the surface. The compost is incorporated into the top 6" of topsoil and should still be visible as darker material. Topsoil is free of debris over 1 inch.	
	Seed	Check that the bag is sealed with the manufacturer's tag, is not damaged and does not have any signs of moisture or mold.	

✓	Item	Project Engineer's Review and Inspection	Comments
		Inspect Seed tag to ensure seed has not been with Contractor over 30 days and species match those specified in Contract. Ensure the seeding occurs within the acceptable seeding season for the site location. No winter seeding when frozen and seeding should not occur during excessively wet soils.	
	Erosion Control Mulching or Blanketing	Ensure seed is mulched within 24 hours. Mulch – inspect mulching to ensure it was applied at the manufacturer's recommended rate for slope and ensure proper coverage. Erosion Control Blanket ● Verify Erosion Control Blankets are 100% biodegradable ● Verify Erosion Control Blankets are suitable for the design slopes	
	Partial Acceptance	Check that mulch and seeding have been completed per specification.	
	Maintenance	Seed germinates within 1 to 3 weeks if the soil is kept moist. Mowing can occur after 3 to 4 weeks.	
	Final Inspection	After 60 days, inspect lawn seed growth for final acceptance. The characteristics of a successful lawn seeding are vigorous dark green or blueish green (not yellow) grass with a uniform density. Areas that fail to establish will be rejected and need to be repreped, reseeded, and remulched during acceptable lawn seeding seasons and irrigation availability.	